WHAT IS CLAIMED IS:

1. An integrated lithographic fabrication cluster system, comprising:

an exposure apparatus configured to expose a pattern onto a substrate;

an exposure controller to control said exposure apparatus;

a track apparatus interconnecting a plurality of processing modules;

a track controller to control said track apparatus;

a wafer handling apparatus coupled to said exposure apparatus and said track apparatus and configured to transfer substrates between processing modules utilized by said exposure apparatus and said track apparatus;

a wafer handling controller to control said wafer handling apparatus; and

a cluster controller,

wherein said cluster controller communicates output control information to at least one of said exposure controller, said track controller, and said wafer handling controller to manage operations of said exposure apparatus, said track apparatus, and said wafer handling apparatus.

2. The system of Claim 1, wherein said output control information includes at least one of wafer handling timing, wafer handling sequence and path direction, utilization of said processing modules, maintenance of consistent processing times, control application of process and exposure corrections, and updating of a user interface.

3. The system of Claim 1, wherein said processing modules include at least one of a bake station, chill station, priming station, resist coating station, anti-reflective coating station, soft bake station, developer station, and measurement station.

4. The system of Claim 3, further including an archive that stores metrology information and substrate attribute information provided by said measurement station.

5. The system of Claim 4, wherein said metrology and substrate attribute information includes at least one of feature size of said substrate, size of individual target fields of said substrate, thickness of resist on said substrate, thickness of anti-reflective coating on said substrate, size of gap in between features of said substrate, X and Y diameter of holes and posts, ellipticity of holes and posts of said substrate, area of feature on said substrate, width at top, middle, and bottom of feature of said substrate, line edge roughness of said substrate, feature sidewall angle of said substrate and overlay in X and Y directions.

6. The system of Claim 4, wherein said control information is based on input control information accessed by said cluster controller from at least one of said exposure controller, said track controller, said wafer handling controller, said external source, and said archive.

7. The system of Claim 6, wherein said input control information includes at least one of substrate processing history, current and past metrology results, processing steps, processing order, processing times, processing conditions, ambient conditions, number of requested processing modules, number of available processing modules, processing module locations, number of wafer substrates, over head times, substrate handling times, interrupts, errors, warnings, exposure time, reticle exchange time, laser fill time, calibrations, user inputs, past processing results, exposure corrections, reticle corrections.

8. The system of Claim 1, wherein said exposure apparatus, exposure apparatus controller, said track apparatus, said track controller, said wafer handling apparatus, and said wafer handling controller are housed within a common structure.

9. The system of Claim 1, further including said cluster controller accessing run-time process data from at least one of said exposure controller, said track controller, and said wafer handling controller during the fabrication process.

10. The system of Claim 9, wherein said cluster controller generates updated output control data based on said run-time process data and communicates said updated output control data to at least one of said exposure controller, said track controller, and said wafer handling controller.

11. An integrated lithographic fabrication cluster system, comprising:

an exposure apparatus configured to expose a pattern onto a substrate;

an exposure controller to control said exposure apparatus;

a track apparatus interconnecting a post-exposure baking station and a chill station;

a track controller to control said track apparatus;

a wafer handling apparatus coupled to said exposure apparatus and said track apparatus and configured to transfer substrates between processing modules utilized by said exposure apparatus and said track apparatus;

a wafer handling controller to control said wafer handling apparatus; and

a cluster controller configured to communicate control information to at least one of said exposure controller, said track controller, and said wafer handling controller to manage operations of said exposure apparatus, said track apparatus, and said wafer handling apparatus during the fabrication process,

wherein said exposure apparatus, said exposure controller, said track apparatus, said track controller, said wafer handling apparatus, and said wafer handling controller are housed within a common structure.

12. The system of Claim 11, wherein said control information is configured to provided optimized operations and includes at least one of wafer handling timing, wafer handling sequence and path direction, utilization of said processing modules, maintenance of consistent processing times, control application of process and exposure corrections, and updating of a user interface.

13. The system of Claim 11, wherein said track apparatus also includes a measurement station.

14. The system of Claim 13, further including a substrate archive that stores metrology information and substrate attribute information provided by said measurement station.

15. The system of Claim 14, wherein said control information is based on input control information accessed by said cluster controller from at least one of said exposure controller, said track controller, said wafer handling controller, and said substrate archive.

16. The system of Claim 11, further including said cluster controller accessing run-time process data from at least one of said exposure controller, said track controller, and said wafer handling controller during the fabrication process.

17. The system of Claim 16, wherein said cluster controller generates updated output control data based on said run-time process data and communicates said updated output control data to at least one of said exposure controller, said track controller, and said wafer handling controller.

18. A substrate manufacturing method employing a lithographic fabrication cluster integrating a cluster controller, an exposure apparatus controller configured to control and communicate with an exposure apparatus, a wafer handling apparatus controller configured to control and communicate with a wafer handling apparatus, and a wafer track apparatus controller configured to control and communicate with a wafer track apparatus, said method comprising:

defining a substrate manufacturing process identifying and initializing operating parameters for at least one of said exposure apparatus, said wafer handling apparatus, and said wafer track apparatus;

accessing, by said cluster controller, input control data from at least one of said exposure apparatus controller, said wafer handling apparatus controller, and said wafer track apparatus controller, to determine information required for operations by at least one of said exposure apparatus, said wafer handling apparatus, and said wafer track apparatus,

respectively;

generating, by said cluster controller, optimized output control data configured to optimize operations of at least one of said exposure apparatus, said wafer handling apparatus, and said wafer track apparatus;

communicating, by said cluster controller, said optimized output control data to at least one of said exposure apparatus controller, said wafer handling apparatus controller, and said wafer track apparatus controller; and

processing said substrate, by said of at least one of said exposure apparatus, said wafer handling apparatus, and said wafer track apparatus, in accordance with said optimized output control data.

19. The method of Claim 18, wherein said processing includes at least one of:

exposing a field on said substrate with a pattern,

subjecting said substrate to a post-exposure processing module, said post-exposure processing module including at least one of a bake station, chill station, priming station, resist coating station, anti-reflective coating station, soft bake station, developer station, and measurement station, and

transferring said substrate between at least one of said exposure apparatus, said wafer handling apparatus, said wafer track apparatus, and said post-exposure processing module.

20. The method of Claim 18, wherein said input control information includes at least one of substrate processing history, current and past metrology results, processing steps, processing order, processing times, processing conditions, ambient conditions, number of requested processing modules, number of available processing modules, processing module locations, number of wafer substrates, over head times, substrate handling times, interrupts, errors, warnings, exposure time, reticle exchange time, laser fill time, calibrations, user inputs, past processing results, exposure corrections, reticle corrections.

21. The method of Claim 18, wherein said cluster controller further accesses

run-time processing data, to determine operational information of at least one of said exposure apparatus, said wafer handling apparatus, and said wafer track apparatus during said processing of said substrate.

22. The method of Claim 21, wherein said cluster controller evaluates said run-time processing data to determine whether to revise said optimized output control data.

23. The method of Claim 22, wherein said cluster controller communicates said revised optimized output control data to at least one of said exposure controller, said track controller, and said wafer handling controller.

24. The method of Claim 18, wherein said optimized output control data includes at least one of wafer handling timing, wafer handling sequence and path direction, utilization of said processing modules, maintenance of consistent processing times, control application of process and exposure corrections, and updating of a user interface.

25. The method of Claim 18, further including an archive that communicates with said cluster controller and stores metrology information and substrate attribute information provided by a measurement station.

26. The method of Claim 25, wherein said metrology and substrate attribute information includes at least one of feature size of said substrate, size of individual target fields of said substrate, thickness of resist on said substrate, thickness of anti-reflective coating on said substrate, size of gap in between features of said substrate, X and Y diameter of holes and posts, ellipticity of holes and posts of said substrate, area of feature on said substrate, width at top, middle, and bottom of feature of said substrate, line edge roughness of said substrate, feature sidewall angle of said substrate and overlay in X and Y directions.

27. The method of Claim 18, further including disposing said exposure apparatus, said exposure apparatus controller, said track apparatus, said track controller,

said wafer handling apparatus, and said wafer handling controller within a common structure.